



FREQUENTLY ASKED QUESTIONS ABOUT CREOSOTE

Q. What is creosote?

A. Creosote is the common name used for a variety of products that include wood creosote, coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles. These products are mixtures of many chemicals and are created by high-temperature treatment of beach and other woods, coal, or the resin of the creosote bush (chaparral). Wood creosote is a colorless to yellowish liquid with a characteristic smoky odor and sharp burned taste. It is relatively soluble in water. Coal tar creosote is a thick, oily liquid that is typically amber to black in color. Coal tar and coal tar pitch are usually thick, black or dark-brown liquids or semi-solids with a smoky or aromatic odor.

About 300 chemicals have been identified in coal tar creosote, but there may be as many as 10,000 other chemicals in this mixture. The major chemicals in coal tar creosote, coal tar, and coal tar pitch that can cause harmful effects are phenols, cresols, and polycyclic aromatic hydrocarbons (PAHs).

Q. Where is creosote used?

A. Wood creosote has been used as a disinfectant, a laxative, and a cough treatment, but is rarely used these ways today in the United States. It is still available as an herbal remedy, and is used as an expectorant and a laxative in Japan. Coal tar creosote is the most widely used wood preservative in the United States. It is also a restricted use pesticide and is found in medicines used to treat skin diseases such as psoriasis. Because of the current widespread use of coal tar creosote as a wood preservative and its past pesticidal applications, it is the form of creosote most likely to be present at hazardous waste sites and landfills. Coal tar, coal tar pitch, and coal tar pitch volatiles are used in several industries, including road paving, roofing, aluminum smelting, and coking.

Q. How might I be exposed to creosote?

A. Individuals who work or live near wood preservative, coke producing, or asphalt industries are at risk for potential inhalation exposure to creosote. Skin exposure can result from direct contact with creosote-treated wood used for fences, bridges, railroad tracks, telephone poles, and some log homes. Hazardous waste sites are a possible source of exposure by contact with contaminated water or soil. Also, creosote is still found in some herbal remedies and medical treatments used for skin disorders.

Q. How can creosote enter and leave my body?

A. Creosote can enter the body through the lungs as a contaminant of air. It may also enter through the stomach and intestines after eating large amounts of contaminated foods, herbal remedies containing creosote bush leaves, or by drinking contaminated water. Creosote can enter the body by absorption through the skin after contact with contaminated soil or treated wood products. Most of the chemicals in creosote that are taken into the body tissues are excreted in the stool and urine within a few days.

Q. How can creosote affect my health?

A. The majority of chemical components of creosote are aromatic and their odor is detectable by humans at very low concentrations. Most exposures to creosote products occur at very low levels that are not harmful. Short-term exposure to high levels of creosote products by direct contact with skin or by exposure to the vapors from these mixtures can cause sun sensitivity, irritation of the respiratory tract, and skin damage such as reddening, blistering or peeling. Animals fed large amounts of wood creosote at one time had convulsions and died, while those fed lower levels developed kidney and liver problems.

There is no evidence that creosote causes birth defects in humans. However, animal studies indicate that components of creosote (such as PAHs) cross the placenta following maternal inhalation and at high concentrations may cause birth defects in offspring. Humans are not likely to be exposed to such concentrations via environmental exposure. There is no evidence that creosote causes asthma; however, it is possible that at high levels, it may exacerbate existing conditions.

Q. How likely is creosote to cause cancer?

A. Skin cancer and cancer of the scrotum have resulted from long-term exposure to low levels of creosote products, especially through direct contact with skin during wood treatment or manufacture of coal tar creosote-treated products, or in coke or natural gas factories. Cancer of the scrotum in chimney sweeps has been associated particularly with prolonged skin exposure to soot and coal tar creosote. These levels were much higher than the levels that one is likely to be exposed to in groundwater, food, air, or soil. Exposure to coal tar products through the skin has resulted in skin cancer in animals. The International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have classified coal tar creosote as a probable human carcinogen.

Q. Is there a medical test to show whether I have been exposed to creosote?

A. There are no medical tests to determine if one has been exposed to creosote. However, some chemicals contained in creosote products can be measured in body tissues or blood. Tests on the urine are commonly done for employees in industries that work with coal tar creosote, coal tar, and coal tar pitch. These tests are not routinely available at a doctor's office, but can be done at special laboratories that have the right equipment. Although these tests can confirm that a person has been exposed to chemicals contained in coal tar creosote, it is not yet possible to use the test results to accurately predict the severity of any health effects that might occur.

Q. What happens to creosote when it enters the environment?

A. Coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles rarely occur in the environment naturally since they are synthetic chemicals. Coal tar creosote is released to water and soil mainly as a result of its use in the wood preservation industry. Microorganisms living both in the soil and natural water break down coal tar creosote components. Coal tar creosote components that dissolve in water may move through the soil to eventually reach and enter groundwater. Once in the groundwater, breakdown may take years. Breakdown in soil can take months for some components of coal tar creosote, or much longer for others. Volatile chemicals in coal tar creosote may evaporate and enter the air. The half-life reported for creosote in the air ranges from about 2 hours to 10 days.

Q. What are the ecological effects of creosote exposure?

A. Coal tar creosote can build up in plants and animals. Plants absorb very little creosote (less than 0.5% of the amount available to the plant). Therefore, the uptake of creosote by humans from plants would be negligible. Fish and other aquatic animals, such as crustacea, shellfish, and worms also accumulate coal tar creosote compounds. Fish are able to breakdown creosote, so the tissue levels are usually low.

Q. Can creosote leach into my water pipes?

A. Creosote is not expected to leach through water pipes (vinyl chloride, copper, or cast iron) unless there is a crack or hole in the pipe.

Q. Are there any standards, guidelines, or recommendations to protect human health from exposure to creosote?

A. There are no regulatory standards or guidelines to protect people from the potential health effects of exposure to coal tar creosote in drinking water and food. The EPA has declared coal tar creosote a restricted use pesticide. To protect workers, the Occupational Safety and Health Administration (OSHA) has established a permissible exposure limit of 0.2 milligrams per cubic meter of air in workroom air during an 8-hour shift. The EPA requires that any release of creosote to the environment of one pound or more should be reported. The Food and Drug Administration (FDA) has issued a public warning against consumption of herbal products derived from the leaves of the creosote bush (chaparral) because of reports of acute toxic hepatitis after use as a dietary supplement.

Q. Where can I get more information?

A. For more information, contact the Virginia Department of Health, Division of Health Hazards Control, 1500 East Main Street, Room 124, Richmond, Virginia 23219, phone: (804) 786-1763.

**PREPARED BY: RAM K. TRIPATHI, Ph.D.
TOXICOLOGIST
MARCH 21, 2000**